

WHAT IS CLAIMED IS:

- 1 1. A base transceiver station for use in communication
- 2 with a plurality of radio mobile station apparatuses based
- 3 on code division multiple access, comprising a reception
- 4 signal interference canceller device,

5 the interference canceller device comprising:

6 a slot configuration circuit for dividing a reception
- 7 signal at certain time intervals, converting the divided
- 8 signal into signals at a faster cycle and converting into
- 9 a signal having a serial slot configuration as many the
- 10 converted signals as stages for stage processing on a signal
- 11 identical to the converted signals at a faster cycle;
- 12 a correlation circuit for performing a despreading
- 13 process on the signal having the slot configuration;
- 14 a stage addition circuit for adding the number of
- 15 stages for stage processing to the despread signals;
- 16 a re-spreading circuit for performing a re-spreading
- 17 process on the signals which have been subjected to the stage
- 18 addition;
- 19 a synthesis circuit for performing a process of
- 20 synthesizing all of the spread signals which have been
- 21 subjected to the re-spreading process to generate replica

22 signals; and

23 a subtraction process circuit for performing a
24 subtraction process between the replica signals and the
25 reception signals,

26 wherein signals obtained by subtraction process for
27 the replica signals and the reception signals are repeatedly
28 fed back to the correlation circuit thereby to eliminate
29 an interference component.

1 2. A base transceiver station according to Claim 1,
2 wherein the slot configuration circuit divides the
3 reception signal at certain time intervals such that one
4 of the divided signals partially overlaps another divided
5 signal at a signal dividing point.

1 3. A base transceiver station according to Claim 1,
2 wherein among the signals having a serial slot configuration,
3 with respect to the slot signal to be despread:

4 before being inputted to the correlation circuit, only
5 a first slot thereof is allowed to pass through and the rest
6 of the slots is disallowed to pass; and

7 the signal whose second slot and subsequent slots are
8 subjected to an interference cancellation process and then
9 fed-back, is inputted into the correlation circuit.

1 4. A base transceiver station according to Claim 1,
2 wherein the stage addition circuit selects valid signals
3 out of the despread signals inputted thereto, selects
4 signals to be added, and selects signals to be re-spread
5 and further selects the despread signals for controlling
6 selections thereof and adding.

1 5. A base transceiver station according to Claim 1,
2 wherein:

3 the correlation circuit comprises a shift register,
4 despread code setting elements and a matched filter having
5 an addition circuit; and
6 in correlation detection for outputting a correlation
7 value signal by sequentially shifting the reception signals
8 inputted to the shift register to the subsequent stages,
9 and meanwhile integrating with the despread code setting
10 elements, and adding the integrated signals, the matched
11 filter conducts correlation detection by switching despread
12 codes set in the despread code setting element within the
13 period during which the signals in the shift register are
14 shifted to the subsequent stages, and performs a despreadng
15 process for a plurality of users.

1 6. A base transceiver station according to Claim 1,
2 wherein the path detection circuit comprises:

3 a selector for selecting pilot signal portions at the
4 beginning of the correlation value signals outputted by the
5 correlation circuit;

6 an averaging circuit for performing an averaging
7 process on the selected pilot signals among the slot
8 signals;

9 an accumulation circuit for performing accumulation
10 of the averaged pilot signals and the slot signals in the
11 subsequent stages;

12 a forgetful averaging circuit for performing a
13 forgetful averaging process between the accumulatively
14 added signals and other accumulatively added signals in the
15 subsequent stages;

16 a path detection/peak detection circuit for detecting
17 paths for the reception signals from the correlation value
18 signals which have been subjected to the forgetful averaging
19 process and detecting the peaks and positions of valid
20 paths; and

21 a despread signal detection circuit for detecting
22 despread signals from the correlation value signals based
23 on the information of valid paths detected by the path
24 detection/peak detection circuit.

1 7. A method for eliminating interference components in
2 a reception signal, comprising the steps of:

3 receiving a signal transmitted by a radio mobile base
4 station;
5 dividing the reception signal at certain time
6 intervals, converting the divided signal into signals at
7 a faster cycle and converting the thus obtained signals into
8 a signal having a serial slot configuration and including
9 as many signals identical to the thus obtained signals as
10 the number of stages for stage processing;
11 performing a despreading process on the signal having
12 the slot configuration and a feedback signal;
13 adding the number of stages for stage processing
14 despread signals obtained by the despreading process;
15 performing a despreading process on the signals which
16 have been subjected to the stage addition;
17 performing a process of synthesizing all of the spread
18 signals obtained by the re-spreading process to generate
19 replica signals; and
20 performing a subtraction process between the replica
21 signals and reception signals and generating the feedback
22 signal to output signals which have been subjected to the
23 stage addition.